

# New Jersey

## Language Arts Literacy Curriculum Framework

### Chapter 3

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#### Cross-Content Workplace Readiness





## CROSS-CONTENT WORKPLACE READINESS

To help prepare students for a rapidly changing world, the State Board adopted five cross-content workplace readiness standards to be integrated with the seven academic standards. These standards define the skills that students need as they pursue college, careers, and adult responsibilities as citizens. The cross-content workplace readiness standards include: career planning and workplace readiness skills; use of technology, information, and other tools; critical thinking, decision making, and problem solving; self-management; and safety principles.

Unlike the cumulative progress indicators for the other content areas, the workplace readiness indicators are not organized by grade-level clusters because, in addition to crossing all content areas, they also cross grade levels. Teachers and counselors should integrate these concepts into all programs in content-specific and developmentally appropriate ways. To strengthen the linkages between the content area and cross-content workplace readiness standards, framework vignettes and activities include interdisciplinary approaches to workplace readiness.

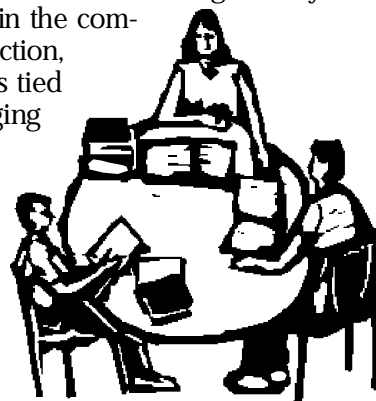
To prepare students adequately for the world of tomorrow, teachers should enlist the assistance of additional members of the educational team, such as the school counselor, school nurse, school library media specialist, and business community in the delivery of workplace readiness knowledge and skills. For example, the school counselor is able to coordinate, consult, collaborate, serve as a resource, and facilitate in order to assist students in the academic, vocational, and personal arenas. School nurses, drawing from their knowledge of the healthcare system, can facilitate service learning experiences, arrange for speakers, coordinate visits to community agencies and healthcare providers, and provide hands-on working experiences in the school health office. Library media specialists provide print and technological resources in the library media center that are available to all students during the entire school day and, often, before and after school. The resource people can assist by supporting cross-curriculum/multidisciplinary instruction for all grades and reading levels. Members of the business community can serve as speakers, offer state-of-the-art materials and/or information, and provide work-based experiences or part-time employment.

The counselor is pivotal to the success of integrating into the instructional program school-based and work-based learning experiences. It is equally evident that the roles of other specialists within the school and work environments need to evolve with the implementation of the cross-content workplace readiness standards. Also, the connecting activities between school and work need to be facilitated at the administrative level in each district. With the integration of the cross-content workplace readiness standards, each content framework assists the entire educational team in the process of curriculum development, revision, and implementation.

### Putting It All Together

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As society becomes more complex, “traditional” education becomes less relevant due to its fragmentary nature. A more effective and engaging approach to education can be found in the combining of two existing instructional approaches. When interdisciplinary instruction, which integrates several content disciplines in a common lesson or activity, is tied to the use of a systems approach, the result is a highly motivating and engaging framework for learning. The systems approach provides an overview of the actions and forces that affect the activity and offers solid experiential education where students learn by doing: by helping to select and design projects, by researching possible solutions, by presenting their work to outside review panels, and, finally, by evaluating their work on their own terms. Academic content is integrated into all of these activities so that students keep up with, and actually surpass, what the standards require.



The use of “hands-on” learning activities increases opportunities for student involvement, adds a sense of personal meaning for the learner, and gives students practice in interacting with the real world around them. Students are excited and motivated by projects in which they play key decision-making roles. They learn to communicate, to create, to think on their feet, and to meet tight timelines. They learn how to work on a team, how to be responsible leaders, and how to listen to and carefully consider the ideas of others. Throughout the process, students gain confidence from the respect and self-satisfaction their success earns.

The following three vastly different scenarios illustrate the interdisciplinary, systems-thinking approach. Although they are presented in elementary, middle, and high school contexts, the scenarios can be adapted to other developmental levels through the creativity of the teacher/facilitator.



## ELEMENTARY SCHOOL LEVEL

### **The Pyramid Reconstruction Systems-Thinking Project**

The primary task of this activity is to engage students in grades three and four in an activity that provides them with an opportunity to discuss and debate the system support mechanism that was needed in order to construct the Great Pyramid of Egypt.

NOTE: Student problem-solving and thinking processes are the important aspects. This activity also focuses on the ability to communicate the results to other members of the class.

#### **BACKGROUND**

The Great Pyramids of Giza, built over 4,500 years ago, continue to impress modern-day engineers and technologists. These tombs are the most famous pyramids, but there are more than 80 other pyramids in Egypt. The largest of the three, the Great Pyramid of King Khufu, was built about 2550 BC. At its peak, it was 481 feet tall and had a square base of 756 feet on each side.

Approximately 2,300,000 blocks of solid limestone, each weighing about 2.5 tons, were used in its construction. Many scholars have offered theories on how the Egyptians accomplished their construction; however, there is no definitive proof substantiating their findings.

#### **THE PROBLEM**

The ancient Egyptians faced many problems while building the pyramids at Giza 4,500 years ago. One of the most obvious problems that they had was moving heavy blocks of stone (about 2.5 tons each) into position to build the pyramid. The largest pyramid at Giza, which is 481 feet high, was constructed from more than 2 million stones. To imagine how high the pyramids actually are envision one and one-half football fields standing end on end. How did the Egyptians move those very heavy blocks of stone to such heights? The problem is to discover a successful technique to move a large stone up an inclined plane.

#### **THE MATERIALS**

The materials are a stone, an inclined plane, sand, water, rope, and wood.

#### **QUALITY WORKERS**

The Egyptians needed to be quality workers. Clearly, their finished project is evidence of their ability to work both individually and in teams. Obviously, the Egyptians understood a great deal about technology and practical problem solving; they were critical thinkers who knew how to make decisions. We know that there was division of labor among the ancient Egyptian workers. For example, there were surveyors, stone cutters, rope pullers, engineers, and architects and designers.

The ancient Egyptians worked on the pyramids only three months of the year, when the Nile River overflowed. Workers demonstrated self-discipline and self-management skills. The Egyptians needed to be safety-minded to ensure that the people who were doing this dangerous work would not be hurt.

### SAMPLE CONNECTIONS

Identified below are some examples of how the classroom teacher may emphasize various content areas through this specific activity and theme.

#### The Arts (Visual and Performing)

Elements of design and aesthetics in the beauty of the pyramid itself may be explored. For example, the interior walls were decorated with paintings. Some of the objects found within the pyramid might be art or artistically designed products.

#### Comprehensive Health and Physical Education

Students may research the diet and lifestyle of the ancient Egyptians to determine how they were physically and mentally fit for this arduous task.

#### Language Arts Literacy

Although students will use all of their language arts literacy skills throughout this activity, emphasis may be placed on additional research or on the student's ability to speak to his or her audience during a culminating presentation on the activity.

#### Mathematics

Students will explore the importance of geometric shapes and properties in designing the pyramids.

#### Science

Students will explore how the needs of the building system were satisfied by a variety of services. Students can construct a chart or diagram that illustrates a variety of system components necessary to support the building project, addressing considerations such as where the drinking water would come from and how it would have been transported and stored. Groups of students can discuss, research, and present to the class a variety of system needs, conveying what, where, and how much support would have been needed for the project. Students' work would include discussion of the principles of levers and wheels.

#### Social Studies

Students will explore Egyptian culture, examining the significance of the pyramids as well as how human beings learn to work together in teams. (It is estimated that between 40,000 and 50,000 people worked collaboratively on the goal of completing the pyramid.)

#### World Languages

Students will explore related aspects of the Egyptian culture that required early settlers from different communities on the Nile to agree to use hieroglyphics in order to facilitate their economic, agricultural, and architectural endeavors (e.g., the building of the pyramids).



## MIDDLE SCHOOL LEVEL

### The Real Game

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Forty-six New Jersey school districts participated in *The Real Game* pilot program in April 1998. The Real Game is a hands-on, practical, experiential learning program that allows students to experience various aspects of the working world by using role playing and game devices. It is cross-curricular and designed for middle and junior high school classes (primarily seventh and eighth grades) with a maximum of 40 students. (Additional versions, ranging from grade one through adult, are currently being planned, developed, and field tested by the National Occupational Information Coordinating Committee [NOICC].) Through a series of interdisciplinary exercises and events guided by teachers or counselors, students become more aware of the world of work and how their actions in school affect their futures. Anecdotal records from New Jersey teachers indicate that content area teachers have reported increased student interest in academics as they begin to see the relevance of their studies to life.

### HOW THE REAL GAME WORKS

#### UNIT ONE: Learning a Living

In the first unit, the students are given an overview of *The Real Game*. The game is presented as a journey in career exploration that will bring the students to “assume the mantle of the expert.” The students are informed that they will, through a randomly chosen occupation, explore aspects related to adult life in our society. In order to assess their current knowledge of terminology and other aspects related to the work world, students complete a questionnaire. (They fill out the same questionnaire at the end of Unit Five to evaluate their progress.) The students play the first round of *The Spin Game* (an interdisciplinary multiple-choice question-and-answer game) and form groups that serve as the basis of many subsequent activities for *The Real Game* program.

#### UNIT TWO: Making a Living

In the second unit, the students really take on their roles. Four activities help them to gradually imagine themselves as adult workers. First, the students explore and express their dreams by choosing from the Wish List items that they would like to have in their adult life. Reality comes into play when students have to balance their monthly budgets (by applying their mathematical skills) and assess what they can actually obtain while taking income and chance (represented by Chance Cards) into consideration. The students then start to personalize their Activity Poster as they gather information on their neighbors’ occupations. Some elements on the Activity Poster include: transferable skills, annual holidays, gross and net monthly income, income tax, bills, and expenses.

#### UNIT THREE: Quality of Life

In Unit Three, the students choose leisure and holiday activities while still taking into account the profile assigned to them. They examine their necessary daily activities and then choose activities to do during their free time. The students then plan a group holiday while taking into account their budget and the amount of vacation time each member has. This is an exercise in negotiation that will give them the opportunity to research specific destinations as well as a variety of occupations in the travel industry.

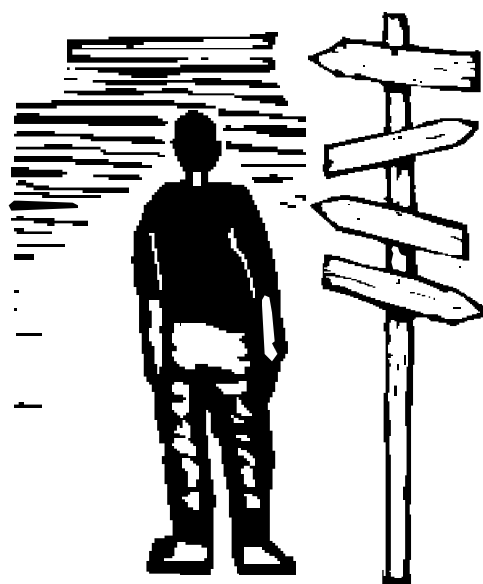
#### UNIT FOUR: Changes and Choices

By participating in the five activities in Changes and Choices, the students are made aware of unexpected elements that occur in the work world and in life. Unforeseen circumstances change the course of the game as students must offer support and assistance to colleagues who are faced with a job loss. Activities, such as group discussions and essay writing, help students to think of positive actions that may bring new possibilities. Finally, the entire class is rendered jobless by large-scale disasters. While working as a team, the students offer solutions and learn how their transferable skills will enable them to grasp other opportunities.

The students then play the second round of The Spin Game so that they may continue to explore the occupations, terminology, and links that exist between their schooling and the work world.

#### UNIT FIVE: The Personal Journey

*The Real Game* ends with Unit Five, where the students imagine themselves in the future and must reflect on their career journey by talking with individuals in the community. Guest speakers are invited to a Career Day. Activities such as these enable the students to share their experiences and new knowledge as well as gather information on the present work world and a variety of careers.





## HIGH SCHOOL LEVEL

**The Life Cycle of a Pencil**

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**ACTIVITY**

Provide each student with a wood pencil. Have them brainstorm on the board a list of materials that make up the pencil, along with the natural resources from which they are derived. Ask them where these natural resources and other materials come from. Discuss possible origins and locate these on a world map. Have the students learn the word for *pencil* in the languages of each country and determine whether pencils are in fact used in each. The components of a wood pencil and their possible origins are provided below:

- Copper—Canada
- Zinc—Poland
- Clay—Mississippi
- Incense Cedar—California
- Graphite—Sri Lanka
- Rubber—Brazil
- Petroleum—Saudi Arabia
- Gum (sap)—Mexico
- Pumice—Italy

Discuss with students the appropriate first aid for someone who is accidentally stuck with a pencil. Then have the students consider the life cycle of a wooden lead pencil “from cradle to grave.” Where do the makings of a pencil begin? Where does a pencil stub go? Draw a large circle on the board with a pencil in the middle of it. Locate steps regarding the formation, use, and disposal of a pencil in appropriate areas around the circle. Sample steps are given below.

- Wood harvested; truck hauls tree to mill
- Mill prepares lumber; lumber shipped to factory
- Graphite mined and shipped to factory
- Clay mined and shipped to factory
- Gums tapped, prepared, and shipped to factory
- Pencils are manufactured
- Trucker hauls pencils to warehouse or railroad
- Trucker hauls pencils to wholesale dealers
- Trucker hauls pencils to retail stores
- Customer drives to store to buy pencils
- Customer uses then discards pencil
- Pencil hauled to landfill or incinerator

Have the students identify the forms of energy (including human) required to extract, process, manufacture, and transport the pencils. Identify various modes of transportation that are available. Identify where materials might be reused or recycled. Throughout the process, identify and research related careers. These other activities usually require a smaller set of steps and can be drawn as smaller concentric circles overlapping with larger circle.



Have the students provide examples of feedback that can be obtained throughout the “life cycles of a pencil.” Have the students explain how that feedback is used to control, alter, or otherwise affect the behavior of a system. Examples include the following:

- Overall demand for and sale of pencils;
- Seasonal fluctuation of pencils, or decrease or increase of sales;
- Availability of refillable, plastic pencils—finding new markets for lead pencils;
- Increased postage for shipping;
- Increased gasoline prices for hauling;
- Minimize the environmental impacts of graphite mining, causing a rise in production costs;
- Development of a new technology that is only feasible if greater bulk of pencils are produced—finding new markets becomes a priority;
- Use only recycled materials in designing pencil packaging; and
- Competitor has lower price per pencil—production costs must be cut to compete.

### EXTENSION

Identify materials that are generated or produced in your local community. Have groups of students select one and research its origins, use, and disposal from “cradle to grave.” Multiple sources of information from the library media center and the community should be accessed, including local tours, visuals, interviews, and the Internet. Have students present their findings using a variety of media. Identify and research related careers. Invite guest speakers to address the students at a career day.

### ACTIVITY ADAPTED FROM:

Resource-Go-Round, *Project Learning Tree Activity Guide*, pps. 316–319.

